

EXHIBIT 10

Expert Report of Suresh Moolgavkar, M.D., Ph.D.

In re W.R. Grace & Co., *et al.*

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must be inferred from a mathematical relationship derived from the observations in the observable range, i.e., at high doses. The straight dashed line is based on the commonly used procedure of linear extrapolation. This is widely considered to be a conservative procedure in that it could, and probably does, over-estimate, but not under-estimate, the true risk. The possible true risks are shown by the curved dashed lines. The further one gets from the observable range, i.e., the lower the dose, the less certain is the quantitative estimate of risk. Dose-response relationships for asbestos-associated cancer are based largely on occupational cohort studies with high levels of asbestos exposure; average exposures in these cohorts are generally greater than 15-20 f/ml-yr².

The conservative nature of linear extrapolation to low doses can be illustrated by considering the case of automobile mechanics, and more specifically, brake mechanics. Because automobile brakes contain asbestos bound in a resin, there was legitimate concern that automobile mechanics who worked on brakes might be at increased risk of mesothelioma and lung cancer. A linear extrapolation model would suggest some excess risk for automobile mechanics working on brakes. However, multiple epidemiological studies (summarized in Goodman et al., 2004) have reported no increased risk of either mesothelioma or lung cancer among automobile mechanics engaged in brake work.

EPA's Unit Risk for Asbestos Carcinogenesis

In 1986, the EPA published a report, Airborne Asbestos Health Assessment Update (EPA 1986), which critically evaluated the scientific asbestos literature available at that time. Among other things, the report estimated the increased risk of lung cancer and mesothelioma per unit exposure of asbestos. The bases for the lung cancer potency estimate were 10 epidemiological studies of workers in the textile production, friction products manufacturing, insulation production, and mixed product manufacturing or use industries. The bases for the mesothelioma potency estimate were 4 of those studies for which sufficient data existed to allow for the estimation of duration and intensity of asbestos exposure, adjusted by the results of several of the other studies.

In 1993, using the information contained in its 1986 report, EPA arrived at a combined unit risk for cancer by life table methods using a relative risk model for lung cancer and an absolute risk model for mesothelioma. The EPA estimate of the inhalation unit risk of 0.23 per (f/ml) for cancer was published in the IRIS profile (EPA 1993) on asbestos. This value can be interpreted as follows. A cohort of 100,000 individuals exposed continuously to a constant concentration of 1 fiber/ml of asbestos from birth would experience 23,000 extra lung cancer or mesothelioma deaths due to the exposure. The 1986 EPA report dealt with occupational exposure to asbestos. In order to derive the value in the IRIS profile the EPA adjusted for the quantity of fiber that a person could be expected to inhale under environmental conditions. Because the unit risk value was based on fiber counts made by phase contrast microscopy (PCM), the IRIS profile warns against applying it directly to measurements made by other analytical techniques, such as

² Cumulative exposure to asbestos is measured in fibers/milliliter years (f/ml-y). One f/ml-y is exposure to an air concentration of 1 fiber per milliliter (cc) in the air for 1 year. A cumulative exposure of 10f/ml-y could occur in various ways, e.g., by exposure to 1 fiber/ml for 10 years or to 2 fibers/ml for 5 years.